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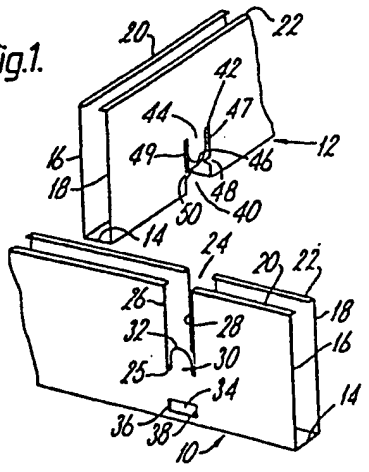
(54) **Panel for a grid ceiling.**

(57) A panel for a grid ceiling in which a first panel member (10) is provided with slots (20) and, between the closed ends (25) of these slots and the webs (14) of the flanges, with apertures (34). Second panel members (12) have cooperating slots (50) with inturned lugs (48, 50) which engage in the aperture (34) to rigidify the cross-over points adjacent the webs (14). Further lugs (56, 58) on the first panel may engage in openings (50) in the second panel members.

Fig.1.



PANEL FOR A GRID CEILING

The present invention relates to a panel for a grid ceiling.

Many forms of panel for grid ceilings have been proposed and these often involve the use of generally hollow metal members of U or V-shaped or channel cross-section formed with side flanges and slots are cut out of the upper part of the side flanges of one set of parallel members and out of the lower part of the flanges of the other set of parallel members to enable the panels to be interfitted at the points of intersection of the grid. While it is known to provide lugs to engage in apertures or openings in the other panel at a cross-over point, this does not provide an entirely satisfactory arrangement in which the interconnection between the panels is fully rigid.

It is now proposed, according to the present invention, to provide a panel for a grid ceiling, said panel comprising first and second metal panel members of U - or V-shaped cross-section, formed with side flanges and with the closed end of the cross-section of each of said panel members facing downwardly and with the first panel members being arranged parallel to one another and the second panel members also being parallel to one another, but perpendicular to the first panel members to form rectangular cells therebetween, the side flanges of the first panel members each being formed with slots extending from the free edges of the side flanges to a point spaced from the closed end of the cross-section and with an aperture on at least one of said flanges between said point and the closed end of the cross-section, the flanges of the second panel members each being formed with a cooperating slot extending from the closed end of the cross-section to a location spaced from the free edge of that flange, the slots of the second panel members being shaped to interfit with the slots of the first panel members at the cross-over points of the grid ceiling, with the closed end of

the first and second panel members then in substantially the same plane and at least one side of each slot of the second panel having a lug extending inwardly of the slot at a position to engage lockingly in the aperture of the first panel.

Such a construction has the lugs of the second panel engaged with the apertures of the first panel at a location close to the closed ends of the cross-section, that is close to the lower surface of the grid ceiling at the cross-over points. It has been found that this can provide a simple way of forming a good rigid connection at the cross-over points.

Preferably each of the flanges of the first panel is formed at the vicinity of each slot, with an aperture between said point and the closed end of the cross-section and each of the edges of each slot of the second panel member is formed with a lug extending inwardly of the slot, whereby, when the panel members are interfitted, the thus formed four lugs each engage a separate end of an aperture of the first panel member.

It will be appreciated that this latter arrangement ensures an even more rigid interconnection of the panels adjacent the lower surface of the grid ceiling.

To facilitate insertion, at the cross-over points, the closed ends of the slots may be provided with a guide tongue which fits snugly within the space between the flanges of the other panel and the free ends of these guide tongues are preferably smoothly curved to facilitate insertion and also to facilitate the formation of the tool used to punch out the panel members.

Advantageously, at least one flange of each second panel is provided with an opening between said location and the free edge of the flange, at least one side of each slot of the first panel member having a further lug extending inwardly of the slot at a position to engage lockingly in the opening of the first panel member. In this way not only is

the connection rigid adjacent the lower surface of the grid ceiling but an even greater rigidity can be provided by the spaced apart cooperation between the lugs of the second panel and the apertures of the first on the one hand and the further lugs of the first panel and openings of the second on the other hand.

Preferably each flange of the second panel is formed, in order to provide even greater rigidity, at the vicinity of each slot, with an opening between said location and the free edge of the flange and each of the edges of each slot of the first panel member is formed with a further lug extending inwardly of the slot, whereby, when the panels are interfitted, the thus formed four further lugs engage in a seperate end of an opening of the second panel member.

In order that the present invention may more readily be understood,the following description is given merely by way of example, reference being made to the accompanying drawing in which:-

Figure 1 is a perspective exploded view showing schematically the first and second panel members of one form of panel for a grid ceiling according to the invention; and

Figure 2 is a similar view of a second embodiment.

Referring first to Figure 1 there are shown a first panel member 10 and a second panel member 12 each of identical cross-section formed of generally U shaped cross-section metal, in fact being channel shaped having a web 14 joining two parallel side flanges 16, 18 provided with inturned rims 20, 22. The first panel 10 is provided from the free edge defined by the rims 20, 22 with a slot 24 having side edges 26, 28, the slot terminating at a point 25 spaced from the web 14. At the closed end of the slots 24 there is provided a guide tongue 30 having a smooth curved upper surface 32. At a position between the point 25 and the web 14 there is provided an aperture 34 of rectangular cross-section having ends 36, 38.

The flanges 16, 18 of the second panel member 12

are each provided with a cooperating slot 40 having a closed end 42 with a guide tongue 44 again having a rounded free end 46. The side edges 47, 49 of the slot 40 are formed with lugs 48, 50 respectively these being of triangular cross-section having a lower surface inclined to these edges at an acute angle and upper surfaces substantially perpendicular to the edges 47, 49.

When the second panel member 12 is moved downwardly relative to the first panel member 10 and the slots 40,24 are interfitted, the panels 30, 44, will pass within the space between the flanges of the other panel and upon further downward movement the lugs 48, 50 will engage in the apertures 34 with a snap-fit action and abut against the ends 36, 38 of these apertures thereby providing a very rigid interconection of the panel members adjacent the webs 14 thereof.

The construction of Figure 2 is very similar and like parts have been indicated by like reference numerals.

The second panel members 12 are additionally provided, between the location 42 of the closed end of the slot 40, with a generally rectangular opening 50 having, adjacent the end thereof, recesses 52, 54.

The panels 12 are generally similar to those of Figure 1, but the edges 26, 28 of the slots 24 are formed with further lugs 58, 56 respectively of generally similar shape to the lugs 48, 50.

When these panels are interfitted, in addition to the lugs 48, 50 engaging the ends 38, 36 of the slots 34, the further lugs 56, 58 engage in the openings 50 and in particular in the recesses 52, 54 thereof, with a snap-fit action. It will be appreciated that this provides an even greater rigidity.

Because the slots 40 also remove a portion of the web 14 of the channel section of the second panel members, these produce an inherent weakness in the second panel members at the points of intersection. The lugs 48, 50

engaging in the apertures 34, and preferably abutting the ends 36,38 thereof, prevent the lower parts of the second panel members moving relative to the first panel members and leaving unsightly gaps as has been the case hitherto.

CLAIMS

1. A panel for a grid ceiling, said panel comprising first and second metal panel members of U - or V-shaped cross-section, formed with side flanges and with the closed end of the cross-section of each of said panel members facing downwardly and with the first panel members being arranged parallel to one another and the second panel members also being parallel to one another, but perpendicular to the first panel members to form rectangular cells therebetween, the side flanges of the first panel members each being formed with slots extending from the free edges of the side flanges to a point spaced from the closed end of the cross-section and with an aperture on at least one of said flanges between said point and the closed end of the cross-section, the flanges of the second panel members each being formed with a cooperating slot extending from the closed end of the cross-section to a location spaced from the free edge of that flange, the slots of the second panel members being shaped to interfit with the slots of the first panel members at the cross-over points of the grid ceiling, with the closed end of the first and second panel members then in substantially the same plane and at least one side of each slot of the second panel having a lug extending inwardly of the slot at a position to engage lockingly in the aperture of the first panel.

2. A panel according to claim 1, wherein each of the flanges of the first panel members is formed, at the vicinity of each slot, with an aperture between said point and the closed end of the cross-section and wherein each of the edges of each slot of the second panel member is formed with a lug extending inwardly of the slot, whereby, when the panel are interfitted, the thus formed four lugs each engage a separate end of an aperture of the first panel member.

3. A panel according to claim 1 or 2, wherein the ends of the slots are provided with a guide tongue which fits

snugly within the space between the flanges of the other panel member.

4. A panel according to claim 3, wherein the free end of the guide tongue is smoothly rounded.

5. A panel according to any preceding claim, wherein at least one flange of each second panel member is provided with an opening between said location and the free edge of the flange, at least one side of each slot of the first panel member having a further lug extending inwardly of the slot at a position to engage lockingly in the opening of the first panel member.

6. A panel according to claim 5, wherein each of the flanges of the second panel members is formed, in the vicinity of each slot, with an opening between said location and the free edge of the flange and wherein each of the edges of each slot of the first panel member is formed with a further lug extending inwardly of the slot, whereby, when the panels are interfitted, the thus formed four further lugs engage in a seperate end of an opening of the second panel member.

7. A panel according to any preceding claim wherein the first and second panel members are of channel shape, having parallel side flanges joined by a perpendicular web at the closed end of the cross-section, and wherein the free edges of the flanges have inturned rims.

8. A panel according to any preceding claim, wherein each of the lugs and of the further lugs is of generally triangular shape having a sloping surface and a locking surface substantially perpendicular to the edge of the respective slot, whereby, when the panel members are interfitted, the flanges of one panel member slide up the inclined surface and then spring back as a snap-fit behind the locking surface to hold the two panel members together at that intersection.

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Fig.1.

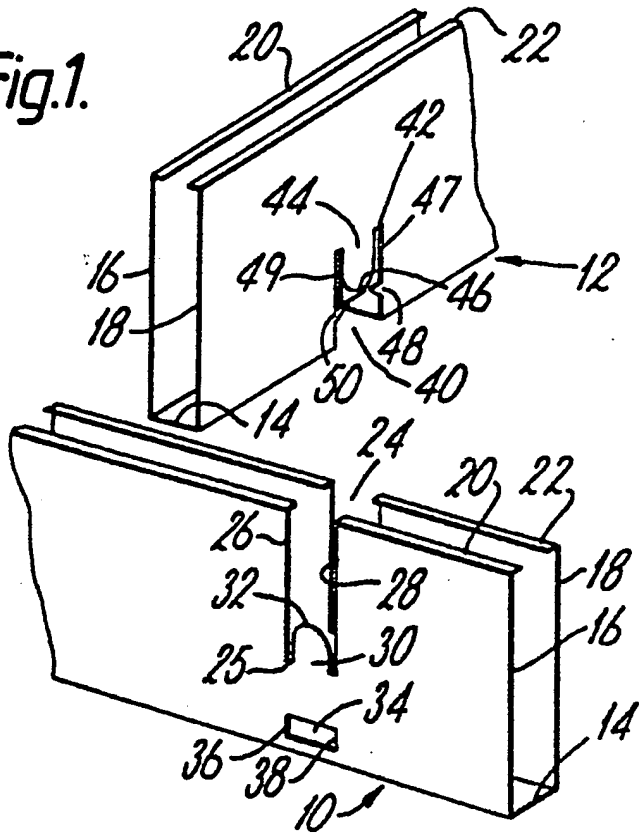

Fig.2.